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It is pleasing to note that the press, The O.A.A. Act. with few exceptions, speak favorably of the proposed Bill to amend the Ontario Architects' Act." Indeed it is not possible to understand how any well-meaning citizen can object to the proposed amendments, as they do not in any way interfere with the rights of any individual or prevent the public from taking advantage of the knowledge or skill, or both, of anyone practising architecture who may not be licensed under the Act. The Toronto World, while favoring the amendments, thinks there is a weakness in the Bill, inasmuch as it does not provide a designation for the unlicensed practitioner. "If he is not to be known as an Architect how can he designate himself?" It can hardly be expected that he will be obliged to solicit business as an "Unregistered Architect," or that he will have to follow Webster and advertise himself as "a person skilled in the art of building." Evidently The World has not read the proposed Bill, or its "funny man" has taken advantage of the staid editor's absence. The unlicensed practitioner, according to the provisions of the Act, may designate himself whatever he chooses, so long as he does not call himself an "Architect." He may be an "Architectural Draughtsman," a "House Designer," or he may advertise himself as "The Greatest Plan Preparer of the Nineteenth Century," if he so wills it. In fact, there is no limit to designation. Here is a sample which may be found in a newspaper published not over a hundred miles from Toronto: "John Roe begs to inform the public that he is prepared to take all kinds of contracts for buildings, repairs, or furnishing materials for same. Plans and specifications for churches, stores and all other kinds of buildings, furnished on the shortest notice. Estimates given while you wait. P.S.—If I get the contracts I make no charge for plans. Sash, doors and blinds always on hand. Live and let live. Give me a call." This, we think, is broad enough a "designation" to cover The World's objection, and the Bill proposed does not pretend to interfere with John Roe or his business. The public will eventually be the gainer if this Bill becomes law, not only because it will have some guarantee that the person intrusted with its work will be in a measure fitted for it, but because of the very fact of a license being required to practice, will prove an incentive to the aspirant for the public favor to better qualify himself for the expected work, knowing as he will know that he will meet in competition men of his own profession, whose knowledge and



experience cannot be gainsaid. It may take a number of years after the passing of the Bill before the architectural profession will feel any direct benefit from it, but much benefit must come sooner or later in many ways. It will have a tendency to create specialists in many branches of the science, just as they have in Europe. One man may become an authority on Gothic, another on Classic, while a third will be known as an oracle on the Renaissance. Ontario is sufficiently advanced in wealth and artistic requirements to give ample scope for specialists in every department of architecture, but in order to attain eminence in any one of them the profession must be protected so far as the public interests will permit.

**The City of Toronto  
v. Neelon.**

MR. Neelon's action against Mr. Lennox, architect of the new city buildings, and the City of Toronto, to recover damages for alleged wrongful dismissal from his position as contractor for the work, has been argued in the Supreme Court. The verdict of the Court confirms the decisions of the inferior Courts, which, as our readers know, were adverse to Mr. Neelon's claims. The case will no doubt be carried to the Privy Council, but there would now seem to be little reason to expect a reversal of the decisions of the several Courts through which it has already passed.

**The Late  
Mr. Atwood.**

MR. Chas. B. Atwood, well known as one of the architects chosen to design some of the more prominent buildings at the World's Fair, died at his home at Buena Park, Chicago, Dec. 19th, after a short and painful illness. Mr. Atwood had a wide reputation in the United States as an architect of more than ordinary ability. He followed, to some extent, the lines laid down by the late Mr. Richardson, to which he added much that was his own, and which evinced originality and scholarly thought. His best works at the World's Fair were the Art Palace and the Peristyle, two buildings that were much admired by members of the profession who had the pleasure of seeing them. Mr. Atwood was born in Boston, Mass., forty-six years ago. He went to Chicago in 1890 and entered into partnership with D. H. Burnham, the eminent western architect, and was a member of the firm when he died. He was unmarried, "for," as he told the writer on one occasion, "if I was a married man my duty to my family would prevent my giving to my profession that attention I wish it to receive at my hands." He loved art, for art's sake.

**Dangerous  
Structures.**

THE necessity of restricting the practice of architecture to persons properly qualified for the work was exemplified by an accident which took place in Toronto recently. The occupants of a warehouse, while engaged in loading the upper storey of the building with merchandise, observed that one of the doors on the ground floor would not close. They called the attention of the owner of the building to the fact, and he in turn brought the matter to the attention of his architect, and requested him to make an examination of the building and to estimate its strength. The result of the architect's examination showed that, allowing for the usual factor of safety, the building was barely strong enough to support its own weight. Yet, in ignorance of this fact, the occupants had placed a load of 20 tons on one of the

upper storeys, and were proceeding to add to this load, when they fortunately made the discovery which resulted in the architect's examination. The building in question is an old one, and was put up in the days when no accurate methods were employed to ascertain the strength of structures. The supports of the upper floors are  $7\frac{3}{4}$  inches in diameter while those of the first storey are but 7 inches. There are, no doubt, a large number of such structures in use throughout the country, and it is too much to expect that sooner or later a disaster will not result.

**Roof Construction**

AN accident occurred on the Thursday night following Christmas that might have resulted seriously. An entertainment was being held in the Mariners' Bethel Church, Philadelphia, when a heavy gale of wind lifted off part of the roof and scattered the fragments on the grounds below. A panic ensued; but, owing to the coolness of a few no one was seriously hurt. Within the last few years many buildings—public and private—have been unroofed, a condition that ought not to be possible if proper constructive methods were adopted. A roof should be so secured that its displacement could only take place with the disruption of the walls, or the building itself. Like many prevalent maladies, the unroofing of buildings seems to be altogether a modern scourge. If any buildings were so constructed in ancient or mediæval times that their roofs were blown off or destroyed by a collapse, the events were kept very quiet, for very few accidents of that sort are mentioned by the older writers. In fact, if the old builders constructed their roofs on the same lines as the examples that have come down to us from the early centuries, there was little danger of their blowing away or collapsing. The roof of Westminster Hall, apart from its ornamentation, is a solid example of fine constructive cunning, and its attachment to the walls such that divorce is rendered impossible without causing the total destruction of the latter.

**Lien Laws.**

MR. Dowling, Labor Commissioner of New York, has been investigating the lien laws of that State, and in a letter to a Syracuse paper states that the laws as they now stand "are of no benefit to either the working man or the owner of the buildings." Mr. Dowling has made a study of the lien law for ten years, both in his own and other States, and the fact that he has arrived at the opinion that these laws are of no benefit to either workman or owner, is a matter that deserves consideration. When lien laws were first enacted, they were intended solely and altogether to protect the workman, to place in his hands, as it were, some means by which he would be sure to get his wages. All this was right and proper, but subsequent amendments and additions to the law, enabling material men, contractors and sub-contractors to file liens and collect on them, have nullified whatever good there may have been in them at first, and so complicative and irritative have they become that many men decline to build for fear they may get entangled in the meshes of the law. In Ontario the law, as it now stands, is actually a deterrent to progress and should be stripped of all its excrescences and rendered as simple as possible. No claims should be allowed under a lien, other than actual labor done by day's work. A liberal percentage of the contractor's tender should be held by



the owner as now, for labor only, and this amount should be exempt from all other claims until labor is satisfied or the amount exhausted.

#### Australian Architecture.

MANY people have an idea that our brethren of Australia are far in the rear of us in the way of building. This, however, is a mistaken idea, for Melbourne and Sydney contain as fine buildings, public and private, as can be found anywhere on this continent. The Eastern Market Building in the city of Melbourne is said to be without a rival anywhere for beauty of exterior, adaptability and general convenience. For several years the municipal authorities of the rival city of Sydney have been collecting data for use in designing and building a new market for that city that would excel the famous market of Melbourne. The result is that an immense Renaissance structure is to be built, on which a central dome will rise to a height of 150 feet above the sidewalk. The contract to complete the building has been let for the sum of \$1,250,000. The designs for this mammoth building were prepared by Geo. McRae, city architect, Sydney, N.S.W.

#### THE gradual disappearance of good Building Timber.

building timber from Ontario, and the substitution of hemlock, soft elm and basswood for white pine and the better class of woods, is the cause of much wrong-doing in the building trades, and the creation of a class of buildings whose lives will be short by comparison. The high price of white or red pine joists is made an excuse by country builders, to substitute hemlock instead, where the use of such uncertain lumber should be carefully eschewed. Fancy hemlock joists in the lower floor of a country farm house, where perhaps only a few inches of space exists between the damp earth and the lower edge of the joists. What is the result? A rotten floor in a few years, and a miasmatic one from the moment it is laid. Where it can be avoided, hemlock should never be employed in a situation subject to alternations of dryness and dampness. It does very well if kept constantly dry, though it has the quality of becoming very brittle if made very dry, and is not by any means a reliable wood if subject to sudden strains. Hemlock may be used with profit in the upper floors of small or medium-sized buildings, that are not likely to be subject to heavy work, and when once in place and properly secured, do satisfactory service. For inside studding, scantlings and light roofing timbers, it will do fairly good service if skilfully arranged and properly secured. It must not be supposed that we decry hemlock as a building material. We do not. Like everything else it has its uses, and it is its improper use we object to. For rough boarding, sheeting and roof covering hemlock has no equal. It is superior to pine in nail-holding qualities, and when dry and properly machined makes a firm and solid base to "side" or shingle over, and each nail may be driven home with a certainty that it will stay where put. When covered, as under shingles, hemlock is not so likely to "swell" or "warp" in a damp atmosphere, as pine would under like circumstances. Hemlock timber, though frequently used in heavy constructions, is rarely satisfactory, owing to the unequal direction of the grain, and the difficulty of working it to correct and proper shape. While it may do passably well for temporary structures, such as bridge centres, platforms, scaffold-

ing, etc., it should never be employed for outside purposes where permanency is an important factor. The scarcity of good lumber, or rather its high price, is working favorably in the interests of permanent buildings. Few country people in the well settled districts of Ontario now ever think of building their houses of wood altogether. The old-fashioned frame house gave way to the lighter and more compact scantling or "balloon" house, and this is fast giving way to the "cased" or "veneered" house, or the solid brick house. It is beginning to be known that a house built of bricks costs but little more than a house built altogether of wood, while the life of the former is three times longer than that of the latter, and the former needs no paint on the walls to preserve it, or to prevent the "poverty stricken" appearance which is sure to attack the latter once every four or five years. The advent of the brick house in the country should be encouraged, and whenever the designing of these is placed in the hands of an architect, he should employ every possible means to give his work a "truly rural" but effective appearance.

#### An Uniform Size for Brick.

THE variation in the sizes of bricks made by different firms often leads to a great deal of inconvenience and useless labor and expense. The introduction of pressed bricks or terra-cotta bricks, among common moulded bricks, is often prevented because of the inequality of sizes—the pressed brick generally being much smaller than the moulded ones—and this militates against the interests of pressed brick makers, for, if moulded and pressed bricks were of one uniform size throughout the country, the use of pressed bricks for trimming windows, doors and other openings, would soon become a fixed practice in the smaller towns, villages and country, and the practise has much to commend it from more points of view than the artistic one. It seems to us that it would be as much within the scope of parliamentary limits, to legislate on the question of "uniformity of size in bricks," as it is to legislate on "weights and measures," and the rights of the community are nearly as much concerned in one as in the other. If one brick differeth from another one-twentieth of its size—and there are greater differences than this—it means a difference of five brick in each hundred, an item that becomes formidable in buildings requiring five or six hundred thousand bricks. Even in a much smaller building the difference may make or unmake the contractor. True, architects frequently specify certain makes of bricks, but this custom is not to be recommended as it may lead to abuses, therefore it is better for everyone concerned that the contractor have a free hand in purchasing all his material, providing always the standard of quality is maintained. A practice, quite common with our neighbors to the south, is to specify certain "makes," not only of bricks, but of hardware, paints, plumbing fitments, heating apparatus, and other building requirements, in all specifications; in fact, in many of the printed forms of specifications, certain goods are specifically named, and the contractor is not permitted to use any other. It will readily be seen to what this method may lead, and does lead—and how the owner may have to pay for goods of an inferior sort when the quality might have been obtained for less money. It is well enough for an architect to specify certain brands at a given price, and to see that the price is paid; then the owner gets value, and the contractor "knows where he is at."



## DOMESTIC ARCHITECTURE.\*

BY GRANT HELLIWELL.

IN venturing to offer a few remarks on this subject, I do so not with the hope of being able to present anything but what has, in substance, often been stated before. The principles on which domestic or any other kind of architecture are based, never change. They are the same to-day as when the first constructions of man worthy of the name of architecture were built. But the applications of those principles are ever changing, and will continue to do so as long as man continues a builder.

This fact renders apology needless; moreover, apart from the deeply absorbing interest with which the subject is invested on its own account, it must ever be a living question with architects, since in the very nature of things, the larger part of the average architect's own living is directly connected with it.

Domestic architecture may very well be considered in two aspects, the first general and the second specific or individual. The former may be likened to the case of a man, who, from some eminence looks out upon a scene of Nature's making. As his eye travels over space, trees, hills, valleys, brooks and ponds, all combine to form a scene of beauty charming alike to vision and to sense. The second aspect is likened to the same man, who, having descended from his vantage ground, concentrates his sight and attention on the foliage of some specific tree or the entrancing beauty of some particular flower. This little analogy, however, is only relatively correct as it must be admitted that the architectural achievements of man seldom if ever bear a favorable comparison with those of Nature's architect.

Taking up then our subject in its general aspect, the impression produced on the mind of an observant person by our residential architecture depends largely, not only on the buildings themselves but on their approaches and surroundings, the disposition of trees and shrubbery and the arrangement of the walks and terraces. That these most important adjuncts to architecture are often overlooked or entirely ignored cannot be disputed and yet their importance can hardly be overestimated. It would perhaps not be too much to say that many dwellings, beautiful in themselves, are so marred and disfigured by their surroundings that their intrinsic architectural worth is almost wholly unknown, while many another house, commonplace and inartistic in design, is so beautified by the accessories of landscape as to attract and delight the eye of all beholders.

Especially in outlying or rural districts has the architect opportunities to obtain pleasing effects impossible in the case of city dwellings. Here not only does the unlimited ground area admit of landscape architecture in perfection, but the natural and topographical characteristics of the site, will, in the hands of a skillful and judicious artist, furnish the key note of the design for the dwelling, and form the basis of a combination, beautiful and satisfying because of the perfect concord of all its parts. If the location is rugged and precipitous and the horizon sharply broken by the peaks of tall pines or rocky crags, every sense of fitness and harmony would be violated by a design in which the prevailing lines were long and level and all features of the building uniform and symmetrical.

We would look rather for an irregular treatment—high roofs and pinnacles—a broken angular skyline, and a general air of rough vigor and strength. On the other hand should the site be on the sea shore, low and flat with level sand beach and horizon unbroken either towards land or water, then a long, straight roof line, broad verandahs and a general horizontality of style and restfulness of feeling would seem to be compatible with the surroundings. On the materials with which buildings are constructed and the colors of those materials much also will depend if a pleasing, artistic and harmonious effect would be produced.

In the case of the dwelling with weird and rugged environment rough stone or brick of quiet hues for the walls and a dull dark roof would seem most suitable; while for the house on the sea shore or among green fields and shady gardens, lighter and more cheerful materials might be used, with brighter and more varied coloring.

Nor is the principle here laid down to be applied only to rural work. If we examine any architecture recognized as of superior merit, either in this or older lands, we will find the treatment adopted wholly due to natural surroundings and climatic influence; and this is doubtless the chief secret of architectural success. The methods of building were not based on mere whim or fancy, but were the direct result of the practical principles of

utility and common sense controlled by a highly cultivated taste for the beautiful.

Take for example the countries of Holland and Belgium or the northern parts of France. Here a picturesque and strongly marked sky line is a striking characteristic of their buildings, a characteristic which may be clearly traced to the natural forces just alluded to. The admiration generally bestowed on these buildings, not to speak of their reproduction in many other lands, bears testimony to their excellence.

As another notable illustration of the same principle, take the architecture of southern Europe, universally conceded to rank amongst the finest architectural achievements of man. In this case the prevailing atmospheric conditions are clear air and bright sunshine, conditions admirably suited to accentuate the contrasts of light and shade. With a keen appreciation of these facts the builders of Italy, for instance, employed methods well calculated to obtain excellent results. Projecting balconies and deeply recessed wall openings, fine and delicately moulded or carved ornament, the free use of color, and everything executed in harmonious and suitable materials all combine to produce buildings which have for ages been an unending source of pleasure and delight.

Until these fundamental principles govern the architecture of our own country we cannot hope for similar success. In studying these fine examples of old work with a view to improvement, it is not the combination of external features, perfect as that is, nor yet the exquisite refinement of detail, much as he may learn from it, that should engross the student's attention. Unless the principles underlying the surface are not only discovered but actually put into practise, but little good will be accomplished.

Suppose one of the well-known facades of Venice, with its profusion of delicate ornament, its glowing colors, the projecting features shining with light, the recessed doorways darkened in shadow and the whole reflected in the blue waters of the Grand Canal. Suppose such a facade transported to one of the streets of a northern town. Imagine those balconies decorated with huge icicles, the interstices of carving and ornament filled with snow. Instead of bright light and deep shadow a dull flat appearing front backed by a duller sky, and we have about as incongruous a picture as the mind could conjure up.

This may be an exaggerated case, but is not a similar mistake, only in lesser degree, too commonly made, with the result that the whole tone of our architecture is correspondingly lowered.

Among the chief characteristics of any town are the disposition and contour of the streets, the sky line formed by the roofs of the buildings, the chimneys, gables and lines of cornices. The architect who has the knowledge and skill to take advantage of broken or uneven sites, to bring the various features of his design into harmony or pleasing contrast with the adjoining buildings or the landscape is to be congratulated. Were this taste and skill more frequently displayed there would be far less of that painful incongruity and discord with which the usual unpicturesque and prosaic conglomeration of roofs and stacks and gables offends, often unknowingly, the eye.

In this connection it will not be out of place to refer to a very common fault in street architecture, that is the treatment of flankages. How many instances can we recall when the flank wall of some dwelling rears its ungraceful sky line obtrusively above the roofs of adjoining houses. Apparently all the resources of its architect were exhausted on the front, leaving not a single idea to expend upon the flank, which stands, grim and bare, a lasting disfigurement and reproach.

Such treatment as this is an infringement of the unwritten law of decency and good taste. Surely something might have been done to make the plain wall tolerable to the eye, even by merely carrying the lines of cornice or mouldings along the sides by means of stone bands or brick sailing courses, to say nothing of some simple design in panel or arcade, either flush or slightly sunk; and just here the writer would like to express his appreciation of a very simple, inexpensive, and to his mind pleasing and effective example in the case of a prominent store building in our own city, whose immense and towering flank has been thus treated.

Another general impression made on the mind of the observer of our domestic architecture, is that of its variety. In some of the finest cities in Europe, notably Paris, fault has been found with the monotonous effect produced by the similarity in design of its buildings. With some few exceptions, that is not a prevailing condition on this side the Atlantic. A close study of nature reveals the marvellous beauties of variety, and in following her example we are not likely to err. While, however, nature gives

\*Read before the Architectural Guild of Toronto, on Jan. 7th, 1896.



countless examples of both variety and contrast she never violates the laws of harmony; and this is where our mistakes are most "en evidence."

The eclectic tendency of our designers, added to the whims and caprices of a builder, result in the most striking discords. Buildings of diametrically opposite style are placed side by side. The color in which one house may be decorated completely kills both itself and the unfortunate neighbors. This lamentable result would not be nearly so common were the buildings separated from each other by even a narrow stretch of landscape or shrubbery; but the insane desire to crowd the greatest number of houses on the smallest possible area of ground greatly magnifies the evil.

The distinction between variety and difference is a wide one, and it is quite possible to secure the greatest variety as well as the most marked contrasts, without those harsh and discordant effects so frequently seen, did those who are responsible for the design bring judgment and taste and study to bear on the problem?

Let us now very briefly consider domestic architecture in its individual or specific aspect, that is the study of a dwelling in itself. We will, I think, find this aspect to be fully as interesting as the broader or more general one we have been discussing. Under this heading much indeed might be said. We might with interest and no little profit sketch the various stages through which the habitations of man have progressed from the earliest examples down to our own day. We might discuss the suitability and adaptability of the different styles of architecture for domestic buildings. But the barest outline of these facts or theories would extend a paper, such as this, beyond all reasonable limits. We will confine our observations on this occasion to a brief consideration of how the main uses for which a dwelling is erected may be architecturally expressed. In other words, attempt to analyse the principles on which house building, from an æsthetic point of view, is based.

Among the numerous uses of a dwelling house shelter, rest and comfort probably come first. Family privacy and hospitality are likewise important considerations. In design the ideal dwelling should fully and unmistakably express these facts and sentiments, not to speak of such others as the specific habits or tastes of its occupants may call for. This great variety of sentiment, in the full expression of which domestic architecture has its highest possibilities, furnishes an opportunity for artistic treatment of almost unlimited scope.

But while the sentiments just alluded to are primarily in the interest of the occupier of the house, the commonest ties of humanity demand that a selfish thought of his own interests should not be the only motives which actuate the house builder. He should be as considerate of his neighbors as he would like them to be of him; and even the general public should by no means be forgotten.

Nor does public spiritedness and friendly consideration for others, even in the matter of house building, go without its due reward. The man who thus thinks of others than himself will have, not only the inward satisfaction that such actions invariably bring; he will set an example that others will follow, to the general improvement and thus ultimate benefit of the whole locality, to say nothing of the greatly improved chances of selling property that has been thus brought favorably to the public notice.

Let us now enquire how the sentiments expressive of home life are to be proclaimed, not in words, but in the more enduring materials of construction. To take the one we have first mentioned, viz.: shelter. How this can be most clearly expressed will depend largely on the climatic conditions obtaining in the specific case. If protection from the burning rays of the sun, or the downpouring of heavy rains is the chief consideration, broad verandahs and roofs with spreading eaves would naturally be appropriate. Is resistance to the violence of the wind and storm most necessary, then projections of less extent and the use of stone or brick and other materials suggestive of strength and durability might be used to advantage.

To continue in order, the next sentiment is Rest. One might well ask, how many of our homes suggest this primal sentiment in their external appearance? Precious few, and yet what architectural expression can be more appropriately given to the dwelling place of man? Why is this? Doubtless because it is most difficult of attainment. One need scarcely say that many of our grandest, most expensive and most elaborately built houses are complete failures in this respect.

Here artistic ability and cultivated taste may well expend their best efforts. It is useless to lay down rules in such a case, but a

suggestion or two may be offered which will perhaps form a base on which to work.

Rest or repose in buildings may be obtained in a variety of ways. Simplicity and breadth of treatment are of the first importance. By skilful composition the various parts of even a complex structure may be so arranged and grouped as to produce a complete whole, the general purpose of which is easily and quickly though perhaps unknowingly comprehended by mind and eye. It is impossible to give an air of quiet restfulness to a house whose facades are full of features—bays and turrets and balconies, windows large and small, square and round distract the eye and weary the brain in a hopeless search for something on which to rest.

A certain proportion of plain wall surface is an indispensable condition; without it repose is unattainable. A judicious use of materials bearing in mind their colors, will also be most helpful in imparting the expression of rest to a building; those that convey the impression of stability and equipoise, the more sombre colors below, the lighter and brighter above.

Comfort, the next quality to be considered, should also be clearly expressed. Here, good workmanship is of paramount importance. Nothing could be more destructive to a sense of comfort than flimsy or cheap materials put together in a careless or slovenly manner. Windows should be of proper size, convenient shape and in suitable positions. An air of spaciousness or at all events an avoidance of anything approaching a cramped appearance. Ample bays and verandahs will add much to the air of comfort.

Privacy—this most important point is too often neglected. The house is for the use of the family, not for the public or even the near neighbors. If circumstances will allow it, the building should be kept well back from street line, and in any case the exercise of judgment and thoughtfulness in arranging the levels and positions of windows will do much to secure this most desirable property.

There are many other sentiments which might most appropriately be expressed in the exterior design of a house, but time forbids reference to more than the remaining one of those before mentioned, Hospitality. This quality is also not to be overlooked or a most serious defect will be apparent.

It is quite frequently the case that on approaching a house the entrance is the last feature to catch the eye, a feature which, perhaps more than any other, impresses an important character on the building to which it belongs. It is the entrance which stamps on any house an air either of hospitality or exclusiveness. A cramped insignificant door or one not easily seen from the street as certainly conveys the latter impression, as a wide, inviting and prominent entrance augurs a hospitable reception to the approaching guest. The doorway should not only be plainly visible to the passer-by, but a due regard for comfort and shelter in the shape of a projecting portico or recessed entrance of generous dimensions will not fail to add greatly to the attractiveness of any home.

These phonetic qualities of architecture may be as clearly impressed on the humble cottage as on the lordly manor. Because every man's house is his castle is no reason why every modest home should ape the pretentiousness of a palace. We have too many instances of this. It is, perhaps, one of the most frequent and offensive infractions of the laws of good taste. If instead of striving after conspicuousness, the chief aim of our architects was quiet dignity and simplicity, with a due regard for the environments of the home, doubtless we should soon see a very marked improvement in the general and specific character of our domestic architecture.

Thomas A. Edison, the electrician, has been investigating the Pierce & Norris method of making bricks out of sand, plants for which are in operation at London, Dunnville, Port Huron, Sarnia and elsewhere in Ontario. Mr. Edison proposes establishing a plant at his home in New Jersey.

Mr. W. A. B. Fishleigh, of Indian Head, N.W.T., has invented a new heater, a patent for which is now being applied for. The cold air enters from the bottom, and passes up and down through several tubes in the inside of the stove before it is emitted. It is claimed to effect a large saving in fuel.

The Stonecutters' Union of Ottawa have decided to enter into competition with masons in laying stone. This has been brought about by the refusal of the Stonemasons' and Bricklayers' Unions to assist the stonecutters in shutting out stone dressed in Hull, by declining to work on buildings on which it is used.



CONCRETE AS A FIRE-PROOF MATERIAL.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—I venture to submit the following quotations from a paper read by John J. Webster, M. Inst. C. E., before the Institute of Civil Engineers, London, Eng. (Paper No. 2518, Vol. C V, page 256, et. seq) :

"d Concrete.—Many of the fireproof floors are now constructed of concrete of various materials, either in the form of arches or with flat ceilings built in situ or in slabs ; the details of the various systems will be fully described in section 2. Although a certain material may withstand the action of fire satisfactorily, it is important to know what will be the effect upon it of water when in a heated state, for in a conflagration these two elements have to be contended with, and very often water causes the more disastrous effects. It may be mentioned that at the great fire at Lynn on Nov. 26, 1889, when buildings covering an area of 40 acres were destroyed, the water used would have flooded the whole space to a depth of over 7 feet, and at the great fire at Boston on Nov. 28th, 1889, sufficient water was poured upon the structures to cover the site to a depth of 12 feet 7 inches.

"To enable some idea to be formed of the action of fire and water upon various concretes, the author made a series of experiments on test briquettes of various mixture, as follows :

10	briquettes of neat cement
10	" 1 part cement 1 part sand
10	" 1 " " 3 " "
10	" 1 " " 5 " "
10	" 1 " " 4 parts ironworks slag
10	" 1 " " 4 " broken firebrick
10	" 1 " " 4 " pumice-stone
10	" 1 " " 4 " coke-breeze
10	" 1 " (plaster of Paris), 4 parts pumice-stone
10	" 1 " " 4 " broken fire brick
10	" 1 " " 2 " " " "
10	" 1 " " 2 " ironworks slag

"The briquettes were of the form usually adopted for testing cement, and the tests were made in a Bailey cement testing machine in the laboratory of University College, Liverpool, Prof. H. S. Hele Shaw, M. Inst. C. E., having kindly placed the use of the machine at the author's disposal. NOTE.—As the stresses to which the various concretes are submitted in an actual structure are very similar to those met with in ordinary engineering works where cement is used, the author felt justified in only applying such a tensile test as is usually adopted in the case of cement.

"Five briquettes of each set were tested at a normal temperature of about 60° Fahrenheit ; the other five were carefully heated on the top of a specially built up fire of coal and coke until they were of a light red heat, the average time of exposure to the heat being about five minutes ; they were then removed, and whilst hot

SUMMARY OF TESTS OF CONCRETE BRIQUETTE.

Number of Table in Appendix	Nature and proportions of material in concrete briquettes	Average weight per cubic foot	Breaking weight per square inch at temperature of 60° Fahrenheit	Breaking weight per sq. in. after being heated and quenched	Average loss per cent of original strength after heating and quenching
I	Neat Portland cement	124.6	554.6	117.2	60.8
II	1 part cement, 1 part sand	120.9	448.0	93.0	80.0
III	1 " " 3 parts "	111.2	100.8	18.7	81.4
IV	1 " " 5 " "	109.7	74.6	15.0	79.8
V	1 part " 4 " iron furnace slag	163.08	108.1	23.06	69.3
VI	1 part cement, 4 parts broken fire brick	95.04	84.4	30.5	50.9
VII	1 part cement, 4 parts Pumice stone	64.8	94.58	38.3	59.5
III	1 part cement, 4 parts coke breeze	71.65	69.9	39.06	57.1
IX	1 part plaster of Paris, 4 parts broken fire brick	89.6	66.8	10.3	75.0
X	1 part plaster of Paris, 4 parts pumice stone	55.6	57.4	3.4	94.7
XI	1 part of plaster of Paris, 2 parts furnace slag	148.0	223.3	6.9	96.8
XII	1 part plaster of Paris, 2 parts broken fire brick	106.9	167.5	15.7	90.0

were quenched with water. A large number of the briquettes lost all cohesive power after being quenched, and it was with difficulty that they were removed intact. As they could not in this state withstand any tensile strain, they were allowed to dry. After three days' exposure to the atmosphere of a warm room they partly

regained cohesion, and were then tested. The details of the tests are given in the appendix table I-XII, and the following is a summary of the results : NOTE.—The briquettes were set in air, and were tested within four or five weeks after being moulded.

"None of the above proportions are those adopted by the maker of any particular flooring, but they are such as to yield a good concrete under ordinary conditions, and are sufficient to enable an opinion to be formed of the strength of certain materials in combination, and of their value in fireproof construction."

The whole paper will well repay careful perusal, but your space will not afford a longer extract. The subject is one of great importance in all cities, and is deserving of careful study. When we build "fire-proof" let us seek to use sure material, and thus not bring discredit on "fire-proofing." It would seem to be high time that, in the larger cities at least, fire-proof buildings be insisted on by the authorities.

Yours very truly,

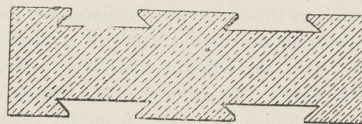
M. J. BUTLER,

M. Inst. C. E.

Deseronto, March 9th, 1896.

RECENT CANADIAN PATENTS.

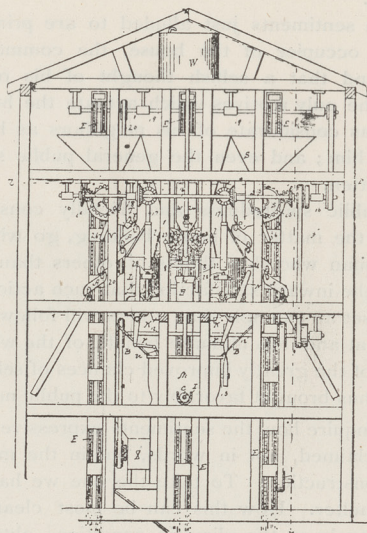
PATENTS have recently been granted in Canada for the following apparatus :—



BRICK.

Patentee : S. I. Adams, Raunhurst, Eng., patented 8th November, 1895 ; 6 years.

Claim.—A brick, either header, stretcher, quoin, or any kind of brick, provided with dove-tailed shaped recesses either above only or above and below, lengthwise or crosswise, substantially as and for the purposes set forth and as illustrated in the accompanying drawing.



APPARATUS FOR MAKING MORTAR.

Patentee : Thos. D. McClary, Washington, U. S., patented 15th November, 1895 ; 6 years.

Claim.—In a mortar-making apparatus, the combination of a lime slaker and a rotating lime meter, the latter provided with compartments, each compartment having a false bottom adapted to be adjusted, or removed, the meter arranged above the slaker so as to discharge therein, by gravity. The combination of a lime crusher, a lime meter having compartments provided with false bottoms adapted to be adjusted or removed, as desired, a lime slaker, a water meter having a graduated standard and a float-valve adjustably connected therewith, the said meters arranged to discharge into the slaker, by gravity, the bottom of the slaker provided with ports and screens, a mixing-tank arranged below the slaker, a sand-meter provided with mangle-gear and operating lever and pawl, a feed regulator, and screens arranged between the said meter and mixer, the mixer provided





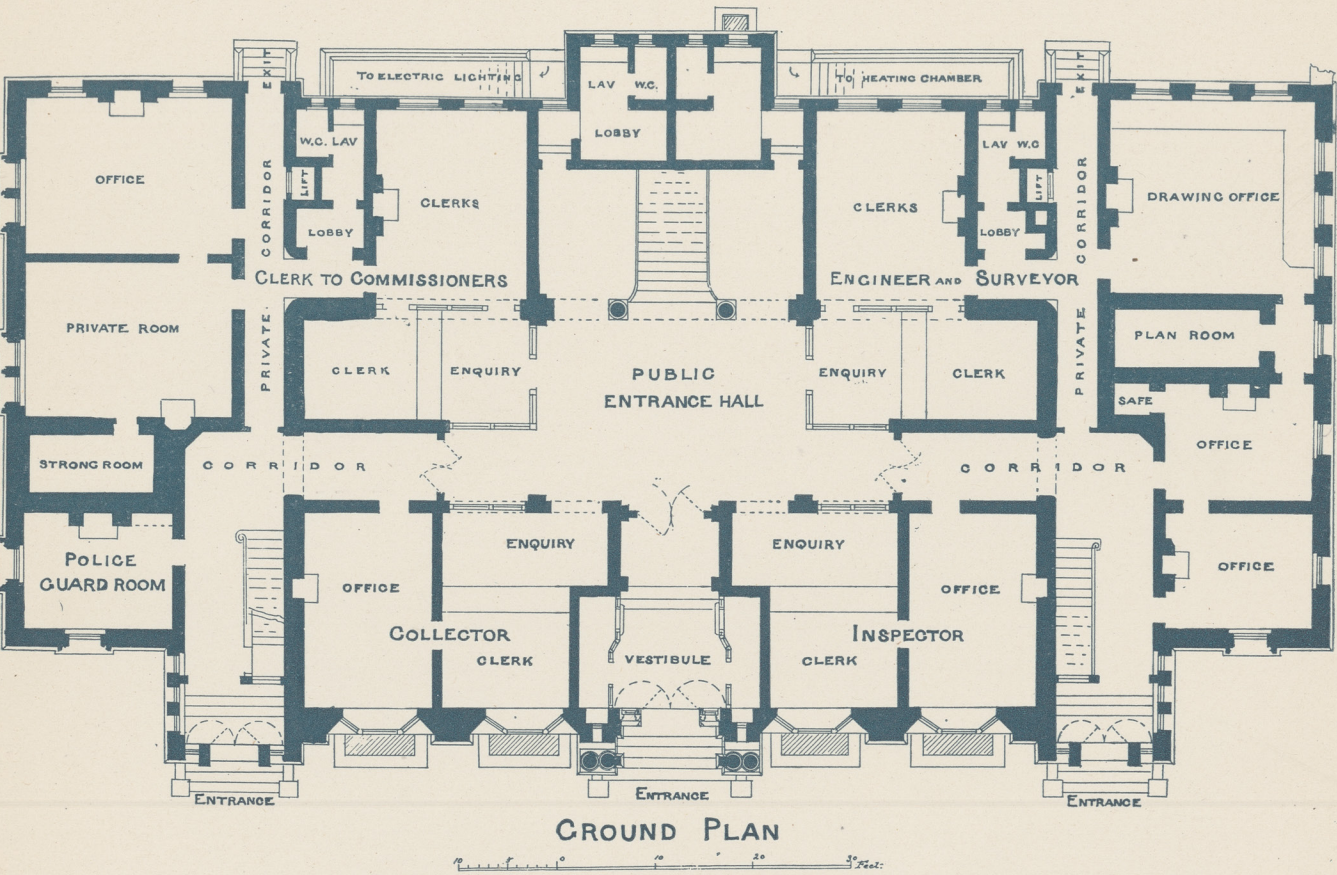
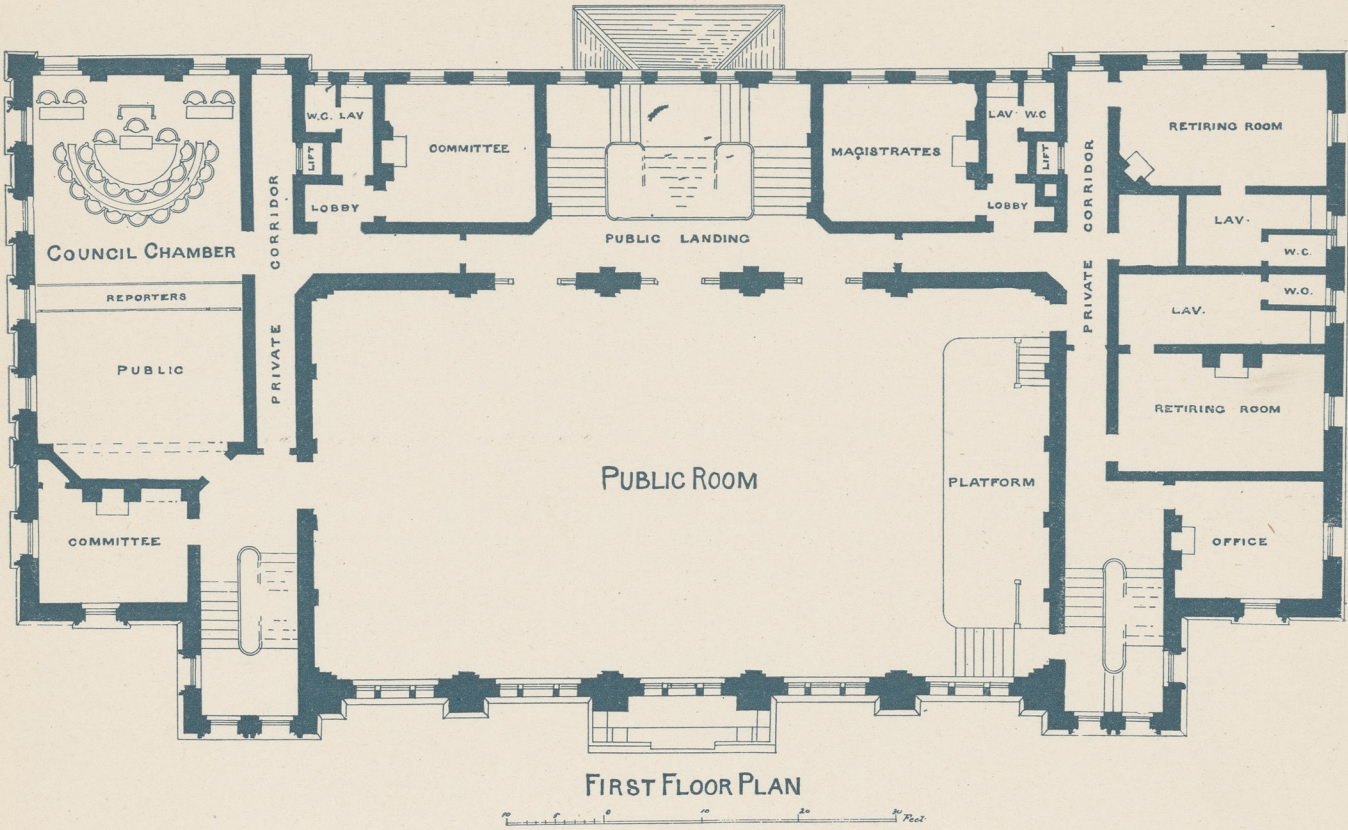
RESIDENCE OF MR. F. T. FROST, SMITHS FALLS, ONT.

J. A. ELLIS, ARCHITECT, TORONTO.









DESIGN FOR TOWN HALL.

EDWARD SWALES, ARCHITECT.





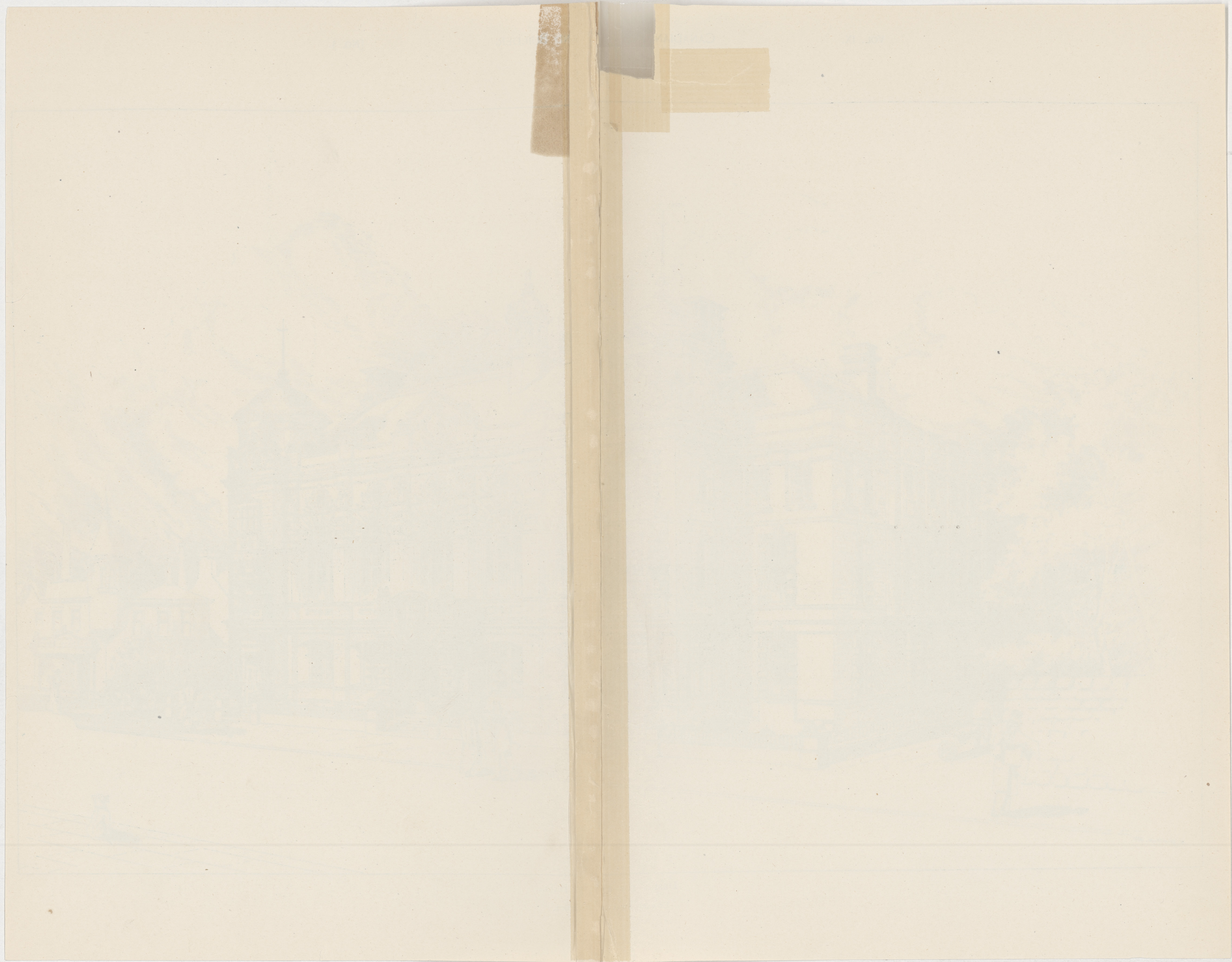




DESIGN FOR A TOWN HALL.

EDWARD SWALES, ARCHITECT.









PROPOSED EAST END STATION OF THE C. P. R., MONTREAL.

GEO. B. POST, ARCHITECT, NEW YORK.



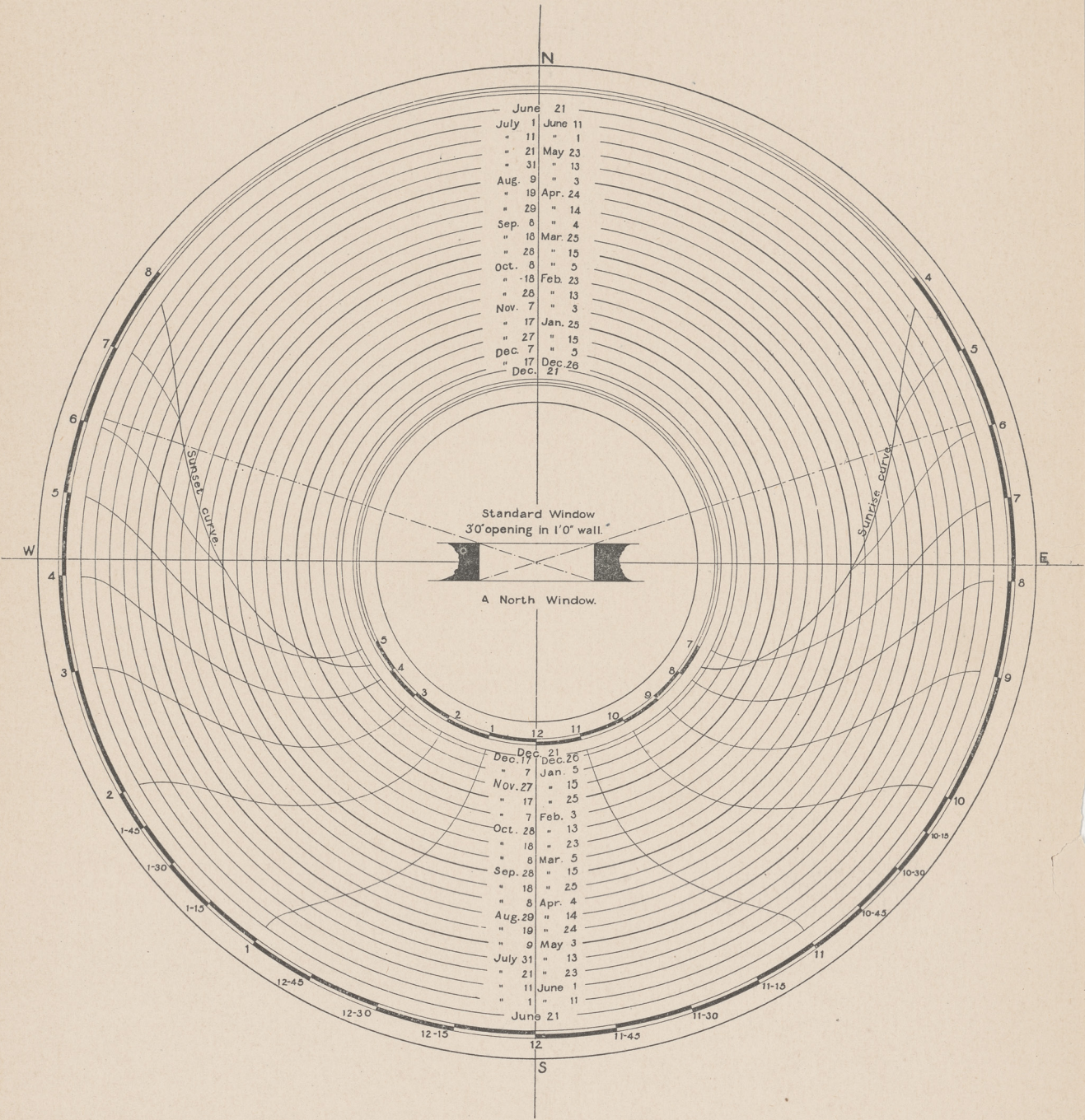
TORONTO, HAMILTON & BUFFALO RAILWAY DEPOT, HAMILTON, ONT.

WM. STEWART & SON, ARCHITECTS.









# ASPECT COMPASS.

ARRANGED FOR THE LATITUDE OF TORONTO—USING APPARENT TIME.

The above compass is the one exhibited at the annual meeting of the Ontario Association of Architects by Mr. C. H. C. Wright, and gives the azimuth (direction) of the sun from sunrise to sunset for any day during the year.

Any architect, by applying a tracing of the plan of any dwelling or building to the compass, can at once determine the amount of sunlight entering through the different windows, and also the exact hours of available sunlight.

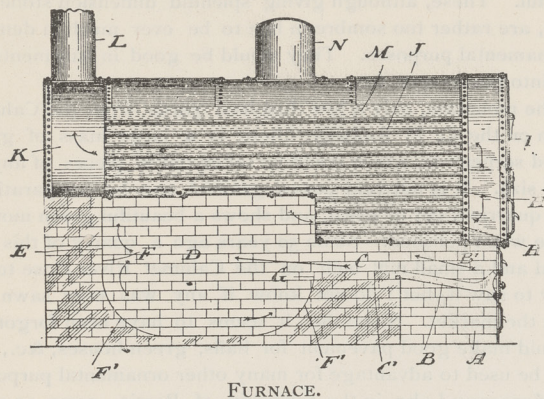
A north window is suggested in the diagram, and shows that the sun will shine through such a window on June 21st, from sunrise until nearly six o'clock in the morning, and in the evening from a little past six until sunset. Again on May 3rd or August 9th the opening will admit direct sunlight from sunrise until a quarter past five, and from a quarter to seven until sunset. After August 18th and until April 25th the sunlight will not enter the window.





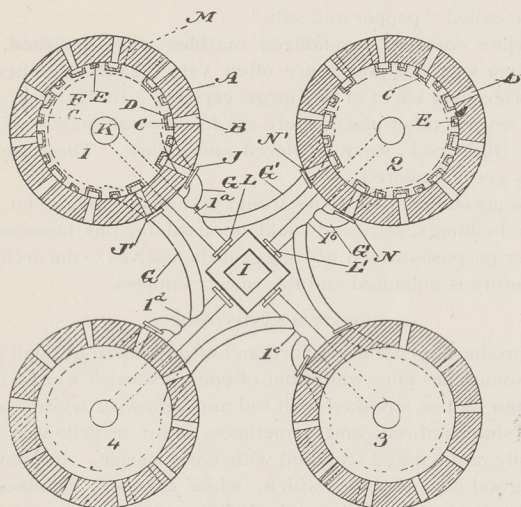


with a discharge port and an interior swinging gate for opening and closing said port, substantially as described.



Patentee: J. W. F. Sole, Guelph, Ont., patented 11th November, 1895; 6 years.

Claim.—In the combination of a combustion chamber closed at its rear end, against which the heated and liberated gases from the fire chamber may be projected as to be deflected, and a boiler provided with a series of short tubes so located as to be immediately over the fire bridge wall and the fire chamber, and forming outlets through which the inflamed and deflected gases pass to the chamber in the front of the boiler, then through the long tube to the rear chambers and smoke stack. In a device, the combination of the ash chamber A, the grate B, the inlet C, between the fire bridge wall C', and the boiler H, the combustion chamber D, having its rear wall E built up to the boiler so as to close the rear end, short tubes H' formed in the lower part of the boiler H, front chamber I, long tubes J, rear chamber K, and smoke stack L, substantially as described.



Patentee: C. J. Lewis, Grimsby, Ont., patented 22nd November, 1895; 6 years.

Claim.—A brick kiln consisting of an outer wall, a series of vertical fire chambers on the inner side of the outer wall, the upper end of each of the vertical fire chambers opening into the body of the kiln, a series of vertical hot air flues arranged around the inner sides of the outer wall and extending through the floor of the kiln, a flue connecting together the lower ends of each of the hot air flues, a main flue to the chimney into which the connecting flue discharges, a draft well formed centrally through the floor of the kiln into the main flue, and dampers for the main flue and connecting flue, substantially as specified.

Composition for artificial stone, Frederick Brown and John King, both of Fort William, Ont.

Radiator for steam heating, F. E. Backus, Williamsport, U. S.

Pipe trap, H. F. Pool, Lyn, Mass.

Josiah Fairbank, Helena, Ohio, machine for erecting frame structures.

Oliver Schlemmer, Cincinnati, Ohio, hot water heating apparatus.

J. J. Baskerville, Duluth, Minn., school desk and seat.

John S. Burton, Danville, Ill., gable ornament for buildings.

Robert W. King, Toronto, Ont., ventilating apparatus.

J. R. Bate, Cincinnati, Ohio, process of preserving wood fibre.

## MONTREAL.

(Correspondence of the CANADIAN ARCHITECT AND BUILDER.)

It is a well-known fact in Montreal that a certain class of architects undertake to carry out work much below the customary percentage of 5% on the cost of the building. The practice generally indulged in is to undertake the preparation of plans and specifications, taking in tenders and superintendence at a cost of 2½% to the proprietor, who is left under the impression that he is saving 2½%, and congratulates himself at not having fallen in with some of those high priced architects with their exorbitant charges of 5%. The bogus architect, as we may be allowed to call him, takes the responsibility of taking out quantities when tenders are about to be called for, and charges a certain fee to each contractor tendering on the job, for a copy of his bill of quantities. Moreover the successful tenderer, under the pretext of remunerating the architect for the work and responsibility incurred by the taking out of these quantities, is forced to pay him an additional fee of 2½% on the acceptance of his tender on the full amount of same. Thus it will be seen the proprietor pays indirectly to the architect more than the customary commission of 5%, as it is evident the contractor reimburses himself for the 2½% commission he has paid, and, moreover, the architect loses his independence towards the contractor, and is entirely at his mercy. As a result, very often, the latter is the sole judge of the interpretation of the plans and specifications, and if he finds he has not made a sufficient allowance for profit or contingencies in his original tender, he invariably tries to save every penny he can on the material and workmanship employed in the building. Honest contractors should unite together and refrain in a body from tendering in the office of an architect who will indulge in these practices, as not only will they have the disadvantage of invariably meeting with the recriminations of the proprietor but also risk their business reputation and lower their class of work below the standard, with the result of being refused the patronage and encouragement of honest architects.

Another well-known method of "boodling" is in the inducement of manufacturers to architects to specify their goods. Manufacturers, anxious to introduce a new heating furnace or other goods or materials used in buildings, pay a certain percentage to architects on the amount of goods specified, for their influence in helping them to introduce the same. All these dishonest practices should be brought to light and strongly condemned, so that persons intending to build may guard themselves against persons carrying on business in a suspicious manner, and encourage the honest, straightforward and deserving class of architects and contractors, with mutual advantages to all concerned.

### AUGE BILL.

The Auge Bill has undergone considerable modifications at the last session of the Legislature (21st December, 1895). It has been first modified so that the workmen's privilege will apply to the plus value only created by their work, and not on the original value, and the starting point of the delay of 30 days allowed for the registration of privileges has been fixed at when the building is ready for occupancy. Architects have not been given a privilege which they did not enjoy before. Their privilege comes next to that of the workman and before that of the contractor. The order of privileges is as follows: 1st, the laborer; 2nd, the workmen; 3rd, the architect; 4th, the contractor. The obscure clause about the sub-contractor, which I explained and condemned in my correspondence on the Auge Bill in the August number of the CANADIAN ARCHITECT AND BUILDER has been cancelled. The privilege given the finisher of materials takes rank only after the privileges previously registered; and when the proprietor has paid the contractor and received notice from the furnisher of materials of money due him by the contractor, the proprietor cannot be held responsible for the same. This amendment is a very desirable one. When a proprietor builds himself, without the intermediary aid of a contractor, the notices from the privileged parties should be addressed to the persons who furnish the funds for the erection of the building. "Le Prix Courant" in an editorial expresses the opinion that as a whole the Auge law is more reasonable and practicable than previously, but that it would have been more simple and preferable to abolish the same altogether.

### CONTRACTORS' DRIVE.

After a lapse of seven years the contractors of this city have revived their popular drives, the first of which was held on Saturday, the 29th of February. Messrs. Peter Wand and W. A. Stephenson assumed the management, and upwards of sixty well-known contractors enjoyed the outing. Their destination was Peloquin's hotel, Sault au Reclot, where an excellent dinner was served, the chair being occupied by Mr. Wand, and the vice-chair by Mr. Peter Lyall. After numerous toasts and speeches, the company returned about ten o'clock and congratulated themselves upon the re-union.

### CORRECTION.

In the reference in our New Year Number to the new Wesley College building, Winnipeg, should have been stated that Messrs. George Browne and S. Frank Peters were associate architects of the building.

T. M. Hennessy, architectural draughtsman of the Department of Public Works, has compiled a most accurate and useful table, setting forth the comparative sizes, absorbing properties, specific gravity, etc., of the different pressed brick manufactured in the Province of Ontario.



## BUILDING STONES OF EASTERN ONTARIO.\*

BY ANDREW BELL.

NOTES ON THE BUILDING STONES FOUND IN EASTERN ONTARIO AND LOWER OTTAWA VALLEY, EMBRACING THAT PART OF THE PROVINCE AND OTTAWA VALLEY EAST OF A LINE FROM THE HEAD OF THE BAY OF QUINTE TO MATTAWA ON THE OTTAWA.

THE following notes are compiled from personal observations, extending over the past 40 years, during which time I was in active practice in that region, both in engineering and architectural building, but principally the former.

The region contains a great variety of valuable, useful and ornamental building stones, in unlimited quantities, for almost any purpose in building, except for highly ornamental cutting such as can be done with the Ohio and similar free stones—of that there may be said to be none or next to none. When I mention a stone that will cut well, I mean the good ordinary cutting for general building, as distinguished from a stone that can be easily cut for ornamental purposes, as before mentioned.

The subject, to do it justice, would require a large volume instead of a short paper; the following notes, on that account, may appear to be rather fragmentary.

I do not speak of the different building stones from a scientific, but from a practical point of view, as I saw them.

Geology divides the rocks in this territory into two general groups—the primitive or igneous formations, and the sedimentary rocks, comprising the Lower Silurian groups. The first covers perhaps two-thirds of the district, and, for our purpose, may be divided into "Granite Proper" and the "Laurentian." The other comprises the "Potsdam Sandstone," the "Trenton and Black River" groups of limestone, (which I will for the sake of brevity call the "Trenton group") and the "Utica Slate," which latter, however, does not furnish any good building stone worth mentioning.

I will take them in the above order.

## GRANITE PROPER.

This is not found exposed in many places, or covering a large area. The best I know of, and the most accessible, is in the vicinity and north of Gananoque, especially at Charleston Lake. There it can be obtained, free from flaws, in any desired size. It is, of course, as all granites are, hard to quarry and hard to cut, but breaks out well with the plug and feather, and, although hard, cuts well and takes a fine polish. It varies in color from light grey to a beautiful mottled red, closely resembling and fully equal to the celebrated Peterhead granite. It looks its best when polished, as in pillars, &c., but would also be admirable for basements.

Granite is found also at several places in the counties of Lanark, Renfrew, Addington, and on the Ottawa, but I do not remember any of them in those localities that are at present easily accessible. Some granite has been quarried near Gananoque, but to such a limited extent, and not at all in the best localities in which it is found, that it may be considered as yet unknown to the general public.

## LAURENTIAN.

Wherever this prevails it generally furnishes fairly good stone for rough rubble work. In many places gneiss is found in courses from 6 to 10 inches thick, with good natural beds, not requiring much dressing, varying from nearly white to dark grey, but can hardly be considered a desirable stone to take to any distance, although useful in its immediate locality.

But the strong point in the Laurentian is its crystalline limestones, marbles, serpentines and dolomite. They are found all over where the Laurentian prevails in great variety—generally coarsely crystallized, although often fine grained. In color generally pure white, light and dark grey, white and grey mixed, or beautifully streaked and mottled with grey and white, or light and dark grey. It is sometimes nearly black, often green, mottled green and white, and sometimes pink, salmon-colored and yellow, and various other colors and mixtures. Generally the crystalline limestones are more in masses than in beds, although sometimes found in well-defined courses from 6 to 24 inches thick, with good natural beds. Stones of almost any desired size can be taken out. They are fairly easily quarried—much easier than granite—break well with plug and feather, cut well, almost always take a fine polish, even when very coarsely crystallized, and are generally very durable. At Portage du Fort and many other places along the Ottawa they are found pure white, or nearly so. In the townships of Dalhousie, Lanark, Pakenham, but especially at and near Arnprior, where is obtained the well-

known "Arnprior marble," they are light grey, grey and white, or light and dark grey mixed, with the markings often very beautiful. These, although giving splendid dimension stone and ashlar, are rather too sombre in hue to be ever much in demand for ornamental purposes. They would be good in basements, or sawn into pavements, &c.

In the mountain, only a few hundred yards from the Calumet station on the C. P. Railway, there is a large mass of green mottled serpentine, which could be taken out in pieces of any required size. It is not very coarse-grained, can be comparatively easily quarried, cut or sawn, and shows a beautiful green mottled surface when polished. Some 50 years ago a quarry of this was opened and a small mill built on the Calumet River close to the quarry to saw it, but I do not know if any was ever sawn and put on the market. Since then it seems to have been forgotten. It should make good pavement for halls, green-houses, &c., and might be used to advantage for many other ornamental purposes.

At Massonog Lake, in the township of Barrie, some 15 or 20 miles north of Kaladar Station, on the Toronto branch of the C. P. R., there is a mountain of marble, mostly white, rising almost perpendicularly out of the lake to a height of 300 feet. It is fine in grain, resembling in appearance the well-known Italian and Vermont marbles, but all the specimens I have examined contained small particles of quartz, which is a serious drawback to its cutting or polishing. It is situated in a wild, almost uninhabited part of the country, and it is therefore probable that it has not yet been carefully examined, nor any regular quarries opened. If that were done intelligently, no doubt some valuable beds of marble would be found in it. As before mentioned, it is mostly white, but some parts or beds are a beautiful light pink, and some spotted and mottled with black, grey, red and other colors.

Near Renfrew a rather fine-grained kind is found, which is white, prettily spotted with light gray or blue, and sometimes with red. Near Bridgewater it is found black and white, or what might be called "pepper and salt."

The white coarsely crystallized marbles when polished, and they take a very fine polish, are often very beautiful on account of the iridescent effect of the large crystals. In Huntley, Darling and several other places there are found small masses of these marbles—light pink, salmon-colored and yellow. They are generally as yet unexplored.

All the crystalline limestones would give good paving for halls of public buildings, &c., and could be used for the thousand and one other purposes which will suggest themselves to the architect. The quantity is unlimited and the variety endless.

## POTSDAM SANDSTONE.

This produces generally a hard and often coarse-grained sandstone—sometimes pure white, but oftener yellowish white, or yellow—often red, or streaked with red and yellowish white, or two or three shades of red, and sometimes white or yellowish white beautifully mottled and streaked with dark purple. It often contains a good deal of iron, which, when exposed, oxidizes and gives an appearance of age to the building, not at all unpleasing to the eye.

Some beds in many places, such as near Pembroke, in Ramsay, near Pembroke; in Ramsay, near Almonte; at Lombardy, near Smith's Falls; in North Elmsley, near Perth, and several places along the Rideau Canal, it gives really good dimension stone of the various colors mentioned, and can be got in courses from 12 to 24 inches thick, with good natural beds, requiring little dressing to lay close joints. The thicker beds often cut fairly well, and sometimes would almost merit the term of free stone.

At Dog Lake, on the Rideau Canal, I have seen it in thick courses of a pleasing light red color. This would make good dimension stone, or good rubble, as it splits parallel with the natural beds. It is coarse in grain but cuts well.

In Ramsay—at Lombardy and at Pembroke—some beds are white or yellowish white, a good example of which may be seen in the Court House at Pembroke, and several buildings at Smith's Falls.

The Potsdam produces splendid rubble stone in a great variety of colors, almost always pleasing—quarries easily, generally with good natural beds, and, although hard, can be easily shaped for use with the hammer or point.

At or near Hudson, on the Ottawa, it is found of a reddish color, a good example of which is the new Catholic church at Oka, opposite Hudson. At Pembroke, besides white, it is found red, or striped red and white, or with two or three shades of red, a good example of which is the new Government buildings at Pembroke. In Beckwith, some six miles from Carleton Place, and

\* Paper read before the Ontario Association of Architects.



2½ miles from the railway, and also in the township of Montague, it is in beds from 4 to 10 inches thick, nearly white, can be quarried easily, has true natural beds, and can be laid up as easily as brick, without any further preparation than breaking to sizes required. In other places, such as Huntley, Ramsay, &c., I have seen it with a white or bluish glassy appearance, often translucent but very hard.

In North Elmsley, near Perth and near the Rideau Canal, there are large quantities white, yellowish white or bright yellow, and the same colors, beautifully striped and mottled with dark purple. It is easily quarried and requires little dressing for use as coursed or broken coursed rubble. Good examples of it can be seen in the railway station at Perth and in the new Government buildings at Almonte, Carleton Place and Smith's Falls. These Government buildings are trimmed with Nova Scotia red sandstone, which matches the rubble very well. It looks well also trimmed with Credit Valley stone and with Ohio free stone. Near Ottawa it is abundant in good form for rubble, as may be seen in the Parliament buildings at Ottawa, which, as trimmed with Ohio free stone, show to great advantage the beauty of this class of rubble stone.

#### THE TRENTON GROUP—LIMESTONE.

This covers a large area and produces our best stone for heavy work, such as canal locks, railway bridges, &c. It is generally a nearly pure carbonate of lime, sometimes mixed with carbonate of magnesia, and often carries a large proportion of sand. I, in common with many of the engineers in Eastern Ontario and Montreal, divide it into two classes, called for want of better names, "Grey" and "Blue," although the color designation is somewhat misleading.

For dimension stone, the "Grey" is found in even beds from one to three feet thick. It is easily quarried, breaks out well with plug and feather, cuts easily and well and is very durable. The grey has a coarse or open grain, and shows a torn or ragged fracture when broken. It produces excellent dimension stone for building. It is abundant and good at Terrebonne, back of Montreal, at Caughnawaga, at East Hawesbury, at Cumberland, at Gloucester, at Hull and at many other places. Examples of its adaptation to the better class of building may be seen in the Court House, the Quebec Bank and other buildings at Ottawa, and in several buildings at Hull. It also gives good rubble, easily dressed into what is locally known as "shoddy."

The "Blue" is fine and close in grain, breaks with a sharp clear cut and often conoidal fracture, presenting a glassy surface. It does not cut nearly so well as the grey, often eating out before the tool, leaving concave hollows. It is not so durable as the grey, nor does it give as good results for dimension stone. It produces abundance of rubble; in fact it is the most commonly used stone all over the country where it can be got, as it is comparatively soft, easily quarried, and requires little preparation for use. The "Blue" is generally bright in appearance when first quarried, but unfortunately fades in a few years and becomes a "sickly" white, as may be seen at Kingston and other places. It makes a poor contrast trimmed with Ohio free stone, but looks much better with the yellow sandstone of the Potsdam formation.

Near Cornwall, near Pakenham and some other places there are thick beds, fine-grained, which take a fine polish, and are first black, with a few white spots when polished. These can be easily sawn, polished and used for paving, and also for any other purpose where it is desirable to use a black marble. They are locally called "Black Marble."

In the township of Beckwith, close to Carleton Place and the C. P. Railway, there is a large quantity, which, as far as I know, is unique. It is of the grey variety, as far as texture is concerned, and is in masses, not having very clearly defined beds, but is easily quarried to any desired size, tools and bush hammers very well, and is really a valuable building stone, although unfortunately the color—a dark grey brown, gloomy in appearance—is much against it. However, it does well in basements, making a ground work from which to start a brighter superstructure. It is now being quarried extensively, and is used in all the towns and villages for a considerable distance in every direction, for sills, lintels, corners, plinths, &c., for which it seems to be well adapted. It is known as "Beckwith Stone" and is a nearly pure carbonate of lime and magnesia, carrying only 3% of silica or other impurities indissoluble in hydrochloric acid. Strange to say, it is often erroneously called free stone or sand stone. A somewhat similar stone is found in Maitland, but it is not so dark in color, and is not nearly so good.

All the region I have spoken of is rich in valuable building stones, of very varied colors and qualities—much more so than

the western part of the province, and could be drawn on to advantage for buildings in the rapidly growing city of Toronto—the only objection being that they are generally somewhat harder than the Toronto builders have been accustomed to.

I have spoken only of what I have seen myself. As a large portion of the district is as yet comparatively unexplored, or little known, no doubt what I have enumerated does not nearly cover the whole field.

In concluding I will take the liberty of recapitulating the building stones heretofore spoken of, which could be advantageously brought to and used in Toronto:

Granite—Especially that from Charleston Lake and in rear of Gananoque and Kingston.

The various Crystalline Limestones or Marbles of the Laurentian formation.

Dimension Stone and Rubble, especially the latter from the Potsdam sandstone. The rubble could be used, either coursed, broken coursed or random, in churches, detached private residences, &c., either trimmed with Potsdam, or with Credit Valley, or Ohio stone.

From the Trenton group, black limestone or "black marble," and the "Beckwith stone."

All of the above can now be obtained close to railways or navigation, although in many cases the quarries are not being worked at present, but soon would be if there was any demand for the stone.

I will be glad at any time to furnish any further information I can as to where and how any of these building stones can be obtained if wanted.

#### CANADIAN SOCIETY OF CIVIL ENGINEERS.

THE following is the Code of Engineering Ethics recently adopted by the Canadian Society of Civil Engineers:—

##### DUTY OF THE ENGINEER TO HIS CLIENT.

1.—Every member of the Society should perform the work he undertakes to do to the best of his ability and in the true spirit of his engagement, feeling it to be his duty to present all ascertained facts in their true light.

##### THE CLIENT'S OBLIGATION TO THE ADVISER.

2.—The Civil Engineer has a right to expect from his client the same consideration and deference to his opinion as is by their clients accorded to the members of other professions—Law and Medicine for example—and without which the adviser should decline to advise. The surest way for the Engineer to obtain such necessary consideration and deference from the public will be found in his manner of carrying himself.

##### MUTUAL RELATIONS OF CHIEF AND ASSISTANT.

3.—The Assistant Engineer must loyally obey and support his Chief, to whom it will be his duty to report directly on all matters relating to the work on which they may be jointly engaged. His report should be full and explicit on all important points and exact to the best of the Assistant's knowledge and belief, cloaking nothing, even though going to show that previous reports have been inaccurate or not duly weighed in some particulars affecting the well being of the business in hand.

4.—The Assistant Engineer is entitled to look to his Chief for, and to receive from him, advice for his guidance in the proper performance of his duties and, where right, to expect his support in matters in dispute between him (the Assistant) and his subordinates or between him and the contractors working under him. He is also entitled to the aid of the Chief Engineer's professional experience or counsel where unlooked for or extraordinary difficulties present themselves or changes of original plan may be called for in the work on which they are associated, so that responsibility may be fairly apportioned between them.

5.—It is the duty of both Chief and Assistant, each in his department, to study proper economy in the doing of the work, the management of which they have undertaken, and in every way consistent with the maintaining of the good character of the work to make the client's interest the guiding object.

6.—The Engineer may legitimately suggest experiments with a view to improvement whether in methods of doing the work which he oversees or for raising its character, but such experiments should only be undertaken with the full consent and co-operation of the party, whether client or contractor, on whom the expense may fall, and on the understanding that to them will accrue all pecuniary benefit from the success of the experiment.

7.—It shall be considered unprofessional for any member of this Society to seek the position of an expert to report on any work that is in charge of a recognized Engineer.

8.—It shall be the duty of any Engineer before examining any work with a view to report thereon to give the Engineer due notice before going on with the investigation, in order that he may have every facility to explain and sustain his methods of carrying on the work in question.

##### PROFESSIONAL SERVICES OF ENGINEERS TO EACH OTHER.

9.—Interchange of professional assistance between members, as tending to promote fraternal intercourse and mutual good-will is not to be discouraged, but neither is it to be considered obligatory on a member to respond to the request of a fellow-member for professional counsel or assistance. Service so rendered must be entirely voluntary on the part of the member whose aid is sought.

##### PECUNIARY MATTERS, ADVERTISING, ETC.

10.—The Civil Engineer may consistently with professional status take out patents for new inventions or for improvements on old ones, and may sell or otherwise dispose of the patents for his own advantage. He may undertake surveys and the engineering of works by contract, or he may take contracts for the construction of works on a percentage of their cost. Advertising with a view to attracting business should, where resorted to, be as far as possible free from egotistic or self-laudatory references and expressed in language not derogatory to the dignity of the profession.

##### DUTIES OF THE ENGINEER TO THE PUBLIC.

11.—The Civil Engineer whose advice is sought in respect to the usefulness, practicability and cost of a work should before expressing his opinion obtain reliable information on all points involved in the matter submitted to his judgment, including the probable paying capacity of the contemplated undertaking. He must be cautious how he recommends large preliminary outlay; should avoid connecting himself with schemes or projects of merely speculative character, always bearing in mind that his professional reputation will be to a great extent judged by the inherent merits and commercial value of the undertakings with which his name may come to be associated.

At the ordinary meeting of the Society held at 112 Mansfield St., Montreal, on the 13th February, the President, Mr. Herbert Wallis, presided. The evening was occupied in the discussion of Mr. W. Bell Dawson's paper on "Retaining Walls," in which Messrs. H. Irwin and J. G. Kerry took a prominent part.

At the meeting on Thursday, February 27th, at which Mr. Wallis, the President, also presided, a paper on the Penn Yan (N.Y.) Waterworks by Mr. Angus Smith, student of the Society, was read by the Secretary. There was also a debate on the following resolution: "That engineering works should be constructed by day's work under the immediate direction of an engineer instead of being done through a contractor." The debate was opened by Mr. W. J. Sproule, and was taken part in by Messrs. Wallis, Irwin, Smith, Kerry, and others.



CORRESPONDENCE.

[Letters are invited for this department on subjects relating to the building interests. To secure insertion, all communications must be accompanied by the name and address of the author, not necessarily for publication. The publisher will not assume responsibility for the opinions of correspondents.]

BUILDING RIGHTS AND MEASUREMENTS.

MONTREAL, Jan. 25, 1896.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—As there are differences of opinion, would you kindly give the law of the Province of Quebec which governs the following questions concerning walls :

1st. If the foundation of a building requires to be planked or concreted say 6 feet wide, do the respective proprietors pay 3 feet each? If the footings are 4 feet wide when there is no plank or concrete, do they pay 2 feet each, presuming in both cases there is a 2 foot stone wall built on it? And do each pay 3 feet or 2 feet of excavation respectively, or just the thickness of the 2 feet wall?

2nd. How many feet English measure are there in a toise of masonry.

3rd. How many bricks are there in a cubic foot of brick work, and does the different thicknesses of a brick wall make any difference in the number? By answering the above in your next edition you will greatly oblige.

A SUBSCRIBER.

[ANSWER.—According to Act 512 and 513 of the Civil Code of Lower Canada, all those that have right to community of wall are obliged to contribute to repairs and reconstruction to half the amount of value of the whole portion of said wall they use, unless they abandon their claims to community. 2nd. The practice in Montreal is to count 80 cubic feet in English measure per toise; measurements vary, however, according to locality. 3rd. A square foot of brick veneering is assumed to contain 7 bricks, an 8 inch wall 14 bricks, and although at this rate a cubic foot of brickwork should contain 21 bricks, it is generally reckoned as 20, there being a little less than 21 bricks in a cubic foot.—EDITOR C. A. & B.]

FIRE RESISTING STRUCTURES.

To the Editor of the CANADIAN ARCHITECT AND BUILDER.

SIR,—Regarding the article which appeared under the above heading in your February issue, I beg to submit a resume of the report of F. D. Moore, President of the Continental Insurance Co., and a member of the Board of Examiners of the Building Department of the City of New York. This gentleman says he has visited and examined the Manhattan building in his official capacity, and clearly states that the cause of the accident was due to the box girder supporting the floors not being protected ; it sagged and carried the upper floors along with it. Mr. Moore also calls attention to one part of the building, composed entirely of wood and glass, which burned fiercely.

This gentleman's report is, in my humble opinion, of far more importance than the opinion of chief Bonner, who, as a fireman, sees a building only when it is on fire. For a man like Chief Bonner to pass an opinion on fireproof buildings, of which he knows nothing, is simply ridiculous. Chief Bonner should learn first that iron which is not properly protected, is not considered fireproof by any one who knows what constitutes a fire-proof building.

What does chief Bonner now think of his wooden buildings in the light of the Troy and Utica fires? The buildings, destroyed in those fires were, according to your statement, the kind he recommends. I would say further, that New York City should never be taken as an example as regards fireproof construction. I dare say there are thousands of buildings in New York that are called fireproof, but judging from what I have personally seen, I am sure that not one-half of them are actually fireproof. There is no law to prevent anyone from calling a cow shed fireproof if he chooses—he may advertise it, post up notices all over that the building is fireproof, and no one may be the wiser until it takes

fire ; then men like Chief Bonner will say fireproof buildings are a failure.

I see only one remedy for this condition of affairs, and that is for the government to appoint an expert, and make it a criminal offence for anyone to advertise a building as fireproof without a certificate to that effect from the government expert. If that were done you would be surprised to see how few really fireproof buildings there are, and how easily they could be made fireproof, and those who intend to put up a really fireproof building would be protected against unscrupulous competitors with their cheap imitations as well as against fraud and ignorance.

Yours truly,

N. T. GAGNON.

TESTS OF CANADIAN BRICKS.

By the courtesy of Mr. Kivas Tully, chief architect of the Public Works Department of Ontario, we are enabled to publish the accompanying table showing the result of tests of Canadian pressed brick made during the past three years for the Public Works Department under Mr. Tully's direction. The tests were made in the laboratory of the School of Practical Science, Toronto. The table of results is as follows :—

FORMULA SHEWING SIZES, TESTS FOR ABSORPTION, ETC., OF PRESSED BRICK MANUFACTURED IN ONTARIO, MADE BY MESSRS. TULLY AND WRIGHT AT SCHOOL OF PRACTICAL SCIENCE, TORONTO.

No.	Label.	Dimensions of Brick—Length, Breadth, Thickness.	Cubic Contents	Weight in ozs. after 4 hours drying.	Weight in ozs. after 14 3/4 hrs. in water.	Absorbed ozs.	Weight per cub. inch in ozs.	Specific gravity.
1.	T. Nightingale..	8.42" x 4.12" x 2.46"	85.338"	88.40/64	100.28/64	11.52/64	1.04	1.76
2.	Boyd .....	8.26" x 4.11" x 2.38"	80.831"	82.25/64	94.57/64	12.32/64	1.02	1.78
3.	B. P. B. Co. ....	8.38" x 4.11" x 2.48"	85.622"	90.44/64	102.42/64	11.62/64	1.06	1.83
4.	T. P. B. Co. ....	8.39" x 4.11" x 2.40"	82.758"	84.24/64	97.7/64	12.37/64	1.02	1.76
5.	Don .....	8.38" x 3.99" x 2.35"	78.575"	92.33/64	99.41/64	7.8/64	1.18	2.03
6.	Ontario .....	8.45" x 4.18" x 2.42"	85.670"	95.63/64	106.40/64	10.41/64	1.12	1.94
a 7.	Deseronto .....	8.04" x 3.85" x 2.34"	72.432"	79.40/64	90.24/64	10.48/64	1.10	1.90
b 8.	Garson P. & Co. ....	8.75" x 4.25" x 2.5"	92.068"	93.32/64	110.48/64	17.16/64	1.00	1.74
c 9.	Garson P. & Co. ....	8.37" x 4.1875" x 2.5625"	89.868"	87	104	17	.98	1.67

NOTE :—As respects the durability and finish of the first six specimens, there is practically no difference ; all are good with a slight difference in color, "Don" (5) and "Ontario" (6) specimens were tested for crushing by Professor Wright 175,000, about 5,100 lbs. per cubic inch. "Don" (5) shows least absorption ; G. P. & Co. (b 8) and (c 9) show greatest absorption.

Department of Public Works, Ontario, January 30th, 1896.

KIVAS TULLY, Architect.

The South Kensington Work on "Building Construction," referring to the absorption test, says, "The amount of water a good brick will absorb is a very good indication of its quality. Insufficiently burnt bricks



absorb a larger proportion, and are sure to decay in a short time. It is generally stated in books that a good brick should not absorb more than one-fifteenth of its weight of water. The absorption of average bricks is, however, generally about one-sixth of their weight, and it is only very highly vitrified bricks that absorb so little as one-thirteenth or one-fifteenth."

It is said by those who have made a study of the subject, that a brick may absorb a large percentage of water and yet not disintegrate easily. Disintegration is largely caused by water and frost. The water absorbed by the brick becomes frozen, causing the expansion and decay of the brick. Another cause of disintegration is lime, which under the action of water, burns out, and causes the brick to go to pieces.

It has been noticed that bricks which absorb less than 10 per cent. and upwards of 15 per cent. of water are better able to withstand the action of the water than those which absorb from 10 to 15 per cent. The water absorbed by the former is not enough to cause sufficient expansion to destroy the structure of the material, while the latter are so porous that the water absorbed quickly drains out again without allowing time for the destructive influence of frost to operate upon the brick. It is estimated that a brick which absorbs 20 per cent. of water will drain out the greater part of this water again in from 20 minutes to half an hour, so that unless frost sets in immediately after rain there is little danger of the brick being injured. A brick which absorbs say 12 per cent. of moisture is considered much more dangerous than one which absorbs 20 per cent.

As very little appears to be known with regard to the character and quality of Canadian manufactured bricks, we would be pleased to be furnished with any further information on the subject, and invite our readers who may be able to do so, to contribute data on this line.

### ONTARIO ARCHITECTS' ACT.

WE are pleased to observe that the Ontario Architects' Act, embodying the amendments desired by the Ontario Association of Architects, has passed its second reading in the Legislature. The Association have taken pains to explain very clearly the meaning and effect of the proposed amendments, and the legislators with scarcely an exception have had the good sense to see that the measure is one which will operate in the public interest. As it is an unwritten law of legislative bodies that a measure which passes its second reading without serious opposition is entitled to a third reading, we look for the adoption of the measure at an early day.

### ILLUSTRATIONS.

TORONTO, HAMILTON AND BUFFALO RAILWAY STATION,  
HAMILTON, ONT.—WM. STEWART & SON, ARCHITECTS.

PROPOSED EAST END DEPOT FOR THE C.P.R. AT MONTREAL.  
—GEO. B. POST, ARCHITECT, NEW YORK.

RESIDENCE FOR MR. F. T. FROST, SMITHS FALLS, ONT.—  
J. A. ELLIS, ARCHITECT, TORONTO.

DESIGN FOR A TOWN HALL.—EDWARD SWALES,  
ARCHITECT.

### COMPLIMENTARY OF THE "ARCHITECT AND BUILDER."

WE have recently received a number of kindly worded letters from some of our subscribers, from which we take the liberty to print the following extracts:

"Many thanks for the copy of your New Year's number of the CANADIAN ARCHITECT AND BUILDER. It is a truly admirable production, and a credit to the arts and crafts of the country in every respect."—Hamilton McCarthy, R.C.A., Toronto.

"I wish to say how much pleasure it gives me to receive the ARCHITECT AND BUILDER monthly, and how much it must please every subscriber to see its rapid progress. The present number is a piece of art for which the publisher deserves the highest credit."—James Mather, Architect, Ottawa.

"I desire to congratulate you upon the greatly improved appearance of your journal, as evidenced in the recent number, both as regards the illustrations, letter press and advertisements; the latter having sketch illustrations, are made more attractive, and consequently receive more attention at the hands of the profession."—Geo. W. Gouinlock, Architect, Toronto.

## STUDENTS' DEPARTMENT.

### MAXIMS FOR DRAFTSMEN.

THE power of shading rightly depends mainly on lightness of hand and keenness of sight; but there are other qualities required in drawing dependent not only on lightness, but steadiness of hand; and the eye to be perfect in its power, must be made accurate as well as keen, and not only see shrewdly, but measure justly.

Nearly all expression of form, in drawing, depends on your power of graduating delicately; and the graduation is always most skillful which passes from one tint to another very little paler.

In darkness of ground there is the light of the little pebbles or dust; in darkness or foliage, the glitter of the leaves; in the darkness of flesh, transparency; in that of stone, granulation; in every case there is some mingling of light.

An entire master of the pencil or brush ought indeed, to be able to draw any form at once as Giotto his circle; but such skill as this is only to be expected of the consummate master, having pencil in hand all his life, and all day long, hence, the force of Giotto's proof of his skill.—Ruskin.

### THE STAIRCASE.

STAIRCASES, says the author of the Architectural Association prize essay on "The History and Development of The Staircase," have been conveniently classed under the following six descriptions: (1), the spiral or newel staircase; (2), the straight staircase; (3) that which goes round two, three or four sides of a rectangular figure; (4), a central ascent with two branches; (5), the circular, semi-circular, or oval open well staircase; (6), compound, composed of straight flight in conjunction with curves. The first two and the third of these we have already noticed as being the usual forms during the Mediæval and Transitional periods respectively, and we shall frequently find examples of the remaining three among the staircases of the Renaissance. The circular or oval well staircase was really the mediæval spiral staircase in an improved form. The fact of the mediæval newel being solid practically placed a limit on its diameter, but the open newel could be made of any size, and consequently the number of steps in each circuit increased, thus allowing the ascent to be made with a less number of revolutions, and greatly diminishing the inconvenience resulting from the varying width of each tread. Geometrical staircases were not introduced till the latter part of the reign of Charles II., and Sir Christopher Wren is said to have constructed the first in the south-west Tower of St. Paul's Cathedral. Winding staircases were very often used during the Renaissance, especially in its earlier stage.

### TORONTO SKETCH CLUB.

A meeting of the Toronto Sketch Club was held at the office of Messrs. Strickland & Symons on Tuesday, Jan. 21st, when Mr. Wickson acted as critic. The subject for competition was the Corner of a Court Yard shewing a Tower, Gable and Entrance—view taken from inside. This was a study in composition and grouping more than detail. The designs were not so numerous as on previous occasions as the subject was rather difficult for the junior members. Mr. E. R. Rolph took first place for the draughtsmen with a design in French Gothic, and Mr. Melville P. White first place for the students.

A meeting was held on Tuesday, Feb. 4th, at Messrs. Curry & Baker's office. Plans were submitted for a farm house for a farm of 100 acres, the owner of the house to work on farm. Mr. Baker criticised the various drawings and considered them all too elaborate for a house of the requirements. The kitchen should be the most important room in the house, whereas the drawing-room in nearly all cases was given the most study. They were more suitable for a gentleman farmer that would have a smaller house attached for farm hands. Mr. C. P. Meredith took first place for the students. The next meeting will be held in Mr. Langton's office on Tuesday, Feb. 18th.



## THE SUBURBAN HOUSE.\*

BY R. J. EDWARDS.

WHEN I was asked by our esteemed Secretary to contribute a paper for this occasion, I may say it was on the spur of the moment I consented; and I have since found it was more easily promised than accomplished in the short time at my disposal. You will, therefore, I beg, expect but a sketchy treatment of the subject I have chosen. I am not sure but that that is the proper treatment anyway, for a too-ambitious is not, perhaps, the best spirit in which to approach the subject in actual practice.

The kind of house I have in my mind is one that will be within the reach of the comparatively poor man. Though living in the city he has not lost, we will suppose, his love of the ideal sun and air of the country. In building his house he can obtain these for all the living rooms only by having it surrounded by sufficient open ground. Happily, the electric railway makes it possible to build where land is cheap without too great a sacrifice of time in journeying to and from business, and in this city he need not go outside the limits to obtain the advantages of the country, together with those necessities of modern life—water, sewers, gas, and I hope soon we shall be able to add, Sunday cars. The cost of the building may be anywhere from \$2,000 up, according to the accommodation required.

I venture to say that architectural taste would gain immensely in this place if all fire limit restrictions were withdrawn, except in the more central districts, provided the houses were kept a reasonable distance apart. Nothing, in my opinion, has had so much influence in making the dwellings of Toronto commonplace as the absurd by-laws the people have imposed on themselves. The effect has been to build whole streets of attached brick or brick-fronted houses. Scores of streets have been architecturally ruined in this way, that might have been attractive had they been built up with detached frame or brick cottages on comparatively wide lots. I think you will all agree with me when I say that our most admired streets owe their beauty more to the well-kept grounds filled with fine shrubs and stately trees than to the houses, good as some of them undoubtedly are. Sherbourne would still be a beautiful street if the best houses were replaced by well-designed cottages costing even less than \$2,000 each, while such streets as Brunswick avenue (it is mostly always avenue) would remain dreary looking if the closely-packed houses had been doubled in cost.

As architects, therefore, we have nothing to gain and much to lose by despising the low-cost dwelling as unworthy of serious attention. Though there is certainly "no money in it" for the architect, there is every other consideration to engage the best efforts of the best men. If we could imagine this a city of houses of good architectural treatment, each house standing free and, if you will, costing less than \$3,000, how vastly would it be improved? If this is true of the whole, I may claim it is even more true of a part, for the part would have the advantage of contrast; and, therefore, every house of the kind that is built and turns out to be a success, is an example worthy of being followed, though not copied, and is a distinct gain to the taste of the town, out of all proportion to the importance of the building itself.

I shall not attempt to indicate what may be good or bad in the arrangement or plan of the house, as much will depend upon the habits and tastes of the occupants. I will say, however, that there should be a conservatory; no matter how small. The common idea is that this is an expensive affair both to build and to maintain. If small, the cost will be slight, and if the heating of the house is by hot water the conservatory will add little if any to the coal bill, and if by furnace, a simple coil can be arranged and operated without additional firing.

The purpose of this paper is to combat the tendency of the time to overdo the exterior of dwellings. People call them "residences" in the spirit which prompts them to name the streets and roads "avenues." As architects we cannot escape responsibility on the ground that our clients demand huge Romanesque arches and a profusion of meaningless carvings. Nevertheless we know to our cost, or even more, to our disgust, that we are not free agents, and that is why it is so much more difficult to practice than to preach. Still, there is nothing like knowing what we should do, even if we cannot often do as we ought, and I shall here briefly attempt to say what I think should be the characteristics of the building in question.

Whatever the materials of construction they should be rationally and truthfully used. There must be no imitations. The treatment should be temperate, having the true domestic feeling, with broad

surfaces and deep shadows. The surfaces may be relieved by telling though not overworked detail in windows, recessed balconies, roomy porches, or a combination of verandah and porch. The entrance should be hospitable-looking, and no feature lends itself more happily to this end than the open porch with its roof a continuation of the main roof lines of the house. The great aim should be to get a good roof sheltering the whole, its bold lines and sparingly broken surfaces giving character to the design. It may be truly said that a really clever roof effect will make a success where without it all is lost.

In this country care must be taken to see that the snow will not lodge in long or shaded valleys, or slide directly upon the steps or walks or on the conservatory roof. No convenience or wholesomeness of the plan should be sacrificed to exterior effect. It is perhaps superfluous to say so, for decidedly the best design is that in which the outside effect grows out of and emphasizes the qualities within, like the face of a man who is devoted to good works. The treatment should suggest coolness in summer and comfort in winter—the former by its deeply shaded porch, balcony and eaves, the latter by its aspect in relation to the hours of sunshine by its spacious chimneys rising from the ground and locating the cheerful open fires in rooms where sunlight and a pleasant outlook are not unprovided for. Both these effects are enhanced by not having too large or too many windows.

There is nothing so good for our climate as the weighted sash window—and I say so after having earnestly tried to work out casements to open either inward or outward. It does not interfere with inside or outside shutters or storm sashes, and admits of moderate ventilation with the minimum danger from drafts. Unfortunately the two-light sash window is not an ideal feature, but it is wonderful how improved is the effect if divided into comparatively small, though not too small, lights. And I have found that if plate glass is used the outlook from within is in no way impaired, if, indeed, it is not actually improved, from the fact, I suppose, that one is conscious that the glass is between oneself and the outer air, which, after all, is the truth. The outside effect of the smaller glass is certainly pleasing, is more homelike and, therefore, more architectural in relation to the subject of this paper. Let me insist, however, on the use of plate glass, except in the less important windows.

Broadly speaking, you should bend your efforts to keeping as close to Nature as you can. Make your house appear to belong to the ground and the woods, and in this connection I cannot help saying I know of nothing in art nearer to the grey of the woods than a shingled wall, softly stained! If you stay as "near the grass" as possible you will favor low ceilings and will not be frightened by the uneducated critic, whose one word is "squatty."

Though I have not said anything original, I shall be satisfied if I have left with you the feeling that I have emphasized some truths.

## PERSONAL.

Mr. Benjamin Dillon, architect, of Kingston, Ont., has opened an office in Renfrew.

Mr. K. Simpson, a railway contractor, died on the 10th of February, at Halifax, from pneumonia.

Mr. E. J. Walsh, C. E., who has been engaged for some time as colonial engineer in the Leeward Islands, has returned to Ottawa.

Mr. P. A. Peterson, of Montreal, chief engineer of the C. P. R., has been selected as vice-president of the American Society of Civil Engineers.

Mr. Charles Kessell, who was the architectural superintendent of the Administration and other buildings at the World's Fair, died in Chicago on the 6th of March.

Mr. R. M. Hannaford, son of Mr. E. P. Hannaford, late Chief Engineer of the Grand Trunk Railway, has been appointed bridge engineer of the G.T.R., with headquarters at Montreal.

Mr. T. R. Johnstone, a leading spirit in the Toronto Sketch Club, and admittedly one of the cleverest young architects of the city, has removed to New York, where he hopes to find a wider field for his abilities.

At the thirteenth annual meeting of the Master Plumbers' Association of Toronto, the following officers were elected for 1896: W. J. Burroughes, president; Jas. B. Fitzsimons, 1st vice-president; Jas. Worthington, 2nd vice-president; F. W. Armstrong, recording secretary; Thos. Cook, corresponding secretary; A. Fiddes, treasurer; J. E. Knott, sergeant-at-arms.

\*Paper read before the Toronto Architectural Guild.